

A New Method of the Production of Cyclobutane Hydrocarbons SOV/20-121-2-30/53

have far higher intensities than in the spectrum of p-methyl-ethyl benzene. This fact proves the existing conjugation between the benzene ring and the 4-membered nucleus. There are 1 table and 12 references, 9 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

PRESENTED: February 27, 1958, by A. N. Nesmeyanov, Member, Academy of Sciences, USSR

SUBMITTED: February 26, 1958

Card 3/3

KUZ'MIN, M. G. Cand Chem Sci -- (diss) "A new method of synthesis of cyclobutanes;  
the catalytic decomposition of tetrahydropyridazines." Mos, 1959. 10 pp  
(Mos State Univ im M. V. Lomonosov. Chem Faculty), 150 copies (KL, 44-59, 125)

5 (2)  
AUTHORS: Levina, R. Ya., Shabarov, Yu. S., SOV/20-127-1-29/65  
Kuz'min, M. G.

TITLE: Cyclopropanes and Cyclobutanes (Tsiklopropany i tsiklobutany).  
On the Decomposition of Alkyl-tetrahydropyridazines (O razlozhenii alkiltetragidropiridazinov)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 127, Nr 1, pp 111 - 114  
(USSR)

ABSTRACT: The authors continue here their investigations of the synthesis of aryl-cyclobutanes (Refs 1,2) by the decomposition of aryl-tetrahydropyridazines and try to use this method for the synthesis of alkyl-cyclobutanes. 3-methyl-tetrahydropyridazine was produced by the hydrolysis of the adduct of azo-dicarboxylic ester with piperylene. The latter contains 2 NH-groups, which indicates that the double bond does not shift towards the nitrogen in the hydrolysis as is the case with the azo-dicarboxylic esters with aryl-butadienes (Refs 2,3), but remains in position 4 (see Scheme). Though the authors failed to produce 3-methyl- $\Delta^2$ -tetrahydropyridazine by hydrolysis, it could be expected that the above-mentioned double bond shifts nevertheless

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Cyclopropanes and Cyclobutanes. On the Decomposition SOV/20-127-1-29/65  
of Alkyl-tetrahydropyridazines

towards the nitrogen under the difficult conditions of the decomposition and that the compound mentioned is produced. The latter could then be caused to decompose into methyl-cyclobutane and nitrogen (similarly to 3-phenyl- $\Delta^2$ -tetrahydropyridazine) (Refs 1,2). This failed, however; 3-methyl- $\Delta^4$ -tetrahydropyridazine decomposed with (at 200-250°) or without catalysts (at 300-350°) only into piperylene, nitrogen, and hydrogen (see Scheme). Two reaction ways can be assumed: (a) The biradical I, which is produced as an intermediate, is transformed only into diene. (b) The initial substance decomposes into piperylene and diimide NH=NH which decomposes immediately into N and H. The decomposition of the initial substance into N and piperylene itself in the case of the effect of weak oxidizing agents speaks in favor of the assumption (a). This decomposition confirms the remaining of the double bond in position 4. Similar results were obtained in the decomposition of 3,4,5,6-bis-cyclopentane- and 3,4,5,6-bis-cyclohexane- $\Delta^4$ -tetrahydropyridazines which contain 2 NH-groups each. They form dicyclopentenyl and dicyclohexenyl besides other reaction pro-

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Cyclopropanes and Cyclobutanes. On the Decomposition SOV/20-127-1-29/65  
of Alkyl-tetrahydropyridazines

ducts mentioned here. It was thus found that it is impossible to obtain cyclobutane-hydrocarbons in two stages (hydrolysis and subsequent decomposition) from adducts of the azo-dicarboxylic ester with alkyl-butadiene or their cyclic analogs. Therefore, the authors applied another method: they synthesized 3-methyl-tetrahydropyridazine, which, however, turned out to be the isomer of the expected compound with one NH-group. An isomerization of the azo form into a hydrazone form apparently takes place here. Experiments with other substances do not lead to the expected result: either the initial substances were not transformed, or a resinification took place. Thus, alkyl- $\Delta^2$ -tetrahydropyridazines cannot be decomposed in the presence of catalysts in the case of heating under the precipitation of N and formation of four-membered cyclic hydrocarbons, in contrast to aryl- $\Delta^2$ -tetrahydropyridazines and pyrazolines. There are 11 references, 8 of which are Soviet.

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Cyclopropanes and Cyclobutanes. On the Decomposition SOV/20-127-1-29/65  
of Alkyl-tetrahydropyridazines

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova  
(Moscow State University imeni M. V. Lomonosov)

PRESENTED: February 18, 1959, by A. N. Nesmeyanov, Academician

SUBMITTED: February 14, 1959

Card 4/4

69860  
9/05/60/002/03/015/03B

5.3100

## AUTHORS:

2201/ELI  
Treshchova, Ye. G., Panchenko, Yu. S., Vasil'yev, N. I.,  
Kiselev, M. G., Snatkov, Yu. S., and Lavina, R. A.

### INDEX: Raman Spectra of Hydrocarbons of Various Classes. VI.

# The Raman Spectra of Some A-1-Cy-Substances

PERIODICAL: Optika i Spektroskopiya, 1963, Vol. 8, No. 3.

PP 371-375 (CUSA)

**ABSTRACT:** The authors investigated the Raman spectra of phenylcyclopropane and cyclohexene, 1-phenylcyclopropane, 1-phenylcyclobutane, and cyclohexene, 1-phenylcyclobutane, 1-phenylcyclopentane, and cyclohexene, 1-phenylcyclopentane, for the sake of comparison the Raman spectra of phenylcyclopropane and 1-phenylcyclobutane were also obtained. The apparatus, the experimental technique and the methods of calculation were the same as in earlier work (Ref. 6). The results are given in Tables 2-4, and the properties (such as the melting point, refractive index, etc.) of the four cycloalkanes and of phenylcyclobutane are listed in Table 1. The Raman spectra of all four cycloalkanes included frequencies characteristic of the appropriate mono- and dialkylbenzenes and alkylcyclobutenes. The intensity of the Raman lines characteristic of the

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four-member cycle, and of the benzene ring (lines in the region 1000-1300 cm<sup>-1</sup>) is characteristic of the spectra of aliphatic compounds. The presence of corresponding lines in spectra of aliphatic compounds and in alkylenes. This behavior of the benzene ring is characteristic of the case of lines at  $\sim 600$  and  $\sim 1000$  cm<sup>-1</sup>, which are characteristic of the benzene ring. There are 4, 5, 6, and 7 C-H stretching vibrations.

**SUBMITTED: July 3, 1953**

LEVINA, R.Ya.; SHAVAROV, Yu.S.; KUZ'MIN, M.G.

N-Carbethoxydihydropyridazines and their derivatives. Zhur.ob.  
khim. 30 no.8:2469-2473 Ag '60. (MIRA 13:8)

1. Moskovskiy gosudarstvennyy universitet.  
(Pyridazine)



SHABAROV, Yu.S.; KUZ'MIN, M.G.; LEVINA, R.Ya.

Tetrahydropyridazines and hexahydropyridazines. Zhur.ob.khim. 30  
no.8:2473-2480 Ag '60. (MIRA 13:8)

1. Moskovskiy gosudarstvennyy universitet.  
(Pyridazine)

84871

S/079/60/030/010/007/030  
B001/B075

11.12.10

AUTHORS: Shabarov, Yu. S., Levina, R. Ya., Kuz'min, M. G.,  
Vasil'yev, N. I., and Damir, N. A.

TITLE: Cyclopropanes and Cyclobutanes XI. Methylphenyl  
Cyclobutanes

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol. 30, No. 10,  
pp. 3210-3214

TEXT: In their investigation (Refs. 1-4) on the catalytic splitting of alkyl- and aryl tetrahydropyridazines, the authors could obtain only aryl cyclobutanes, but no alkyl cyclobutanes (Ref. 4). In the present work, the catalytic splitting of alkyl aryl tetrahydropyridazines has been attempted for the purpose of synthesizing alkyl aryl cyclobutanes. The authors proceeded from 5-methyl- and 6-methyl-3-phenyl tetrahydropyridazines which were obtained by hydrolyzing the adducts of the corresponding dienes with azodicarboxylic acid ester. These initial products proved to be unstable compounds, and were identified from their addition products to phenyl isothiocyanate. The presence of an NH group in the initial products was also proved (Ref. 3). The catalytic splitting of the  
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Cyclopropanes and Cyclobutanes. XI. Methylphenyl S/079/60/030/010/007/030  
Cyclobutanes B001/B075

two initial pyridazines<sup>7</sup> was carried out in the same way as that of aryl tetrahydropyridazines described in Refs. 1-3. Thus, a gas composed of nitrogen and propylene evolved under the formation of a mixture of the corresponding methyl-phenyl cyclobutane and styrene. Consequently, the decomposition of alkyl aryl tetrahydropyridazines is similar to that of aryl- $\Delta^2$ -tetrahydropyridazines: While nitrogen is produced, the biradical is formed as an intermediate which yields cyclobutane and two ethylene hydrocarbons. The molar ratio between the yield of methyl-phenyl cyclobutane and styrene proved to depend on the position of the methyl group in the tetrahydropyridazine ring. Vacuum distillation (cf. experimental part) of the resulting cyclobutane showed that 1-methyl-2-phenyl cyclobutane consisted of a mixture of cis- and trans-isomers (1:1), whereas 1-methyl-3-phenyl cyclobutane contained 80% of the trans-form. Raman spectra showed the absence of olefins in the separated hydrocarbons (Ref. 5). The characteristic frequencies  $912-950\text{ cm}^{-1}$  confirmed the presence of a four-membered ring. There are 1 table and 12 references: 9 Soviet, 2 German, and 1 French.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet  
(Moscow State University)

SUBMITTED: December 7, 1959

Card 2/2

5.3610

69998

AUTHORS: Levina, L. Ya., Shabarov, Yu. S.,  
Kuz'min, M. G.

S/020/60/131/05/027/069  
B011/B117

TITLE: On the Interaction Between Azodicarboxylic Esters and hem-Dialkyl  
Butadienes ↑

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 131, Nr 5, pp 1080-1083 (USSR)

TEXT: The authors continued their investigations of the decomposition of alkyl tetrahydropyridazine (Ref 1), and made an attempt to synthesize hem-dialkyl tetrahydropyridazines from the adducts of the azodicarboxylic ester with hem-dialkyl butadienes. They could establish for the first time that 1,1-dialkyl butadienes react with the azodicarboxylic ester through mobile hydrogen in the α-position (by substitution addition and not by diene synthesis), and not through the double bonds. It could be further proved by the authors that the adducts of the substances mentioned in the title have no cyclic structure (being no tetrahydropyridazine derivatives), but they are, in reality, mono-substituted hydrazo dicarboxylic esters (see schemes). The structure of the adduct (I) of 2,4-dimethyl pentadiene with an azodicarboxylic ester was established by means of its conversions: when subjected to cold hydrogenation, (I) adds two moles of hydrogen per one mole of (I), and, thus, contains two double bonds in the molecule. Hydrolysis of (I) yields a monosubstituted hydrazine (III). The

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On the Interaction Between Azodicarboxylic Esters  
and hem-Dialkyl Butadienes

S/020/60/131/05/027/069  
B011/B117

latter contains one  $\text{NH}_2$  group which was detected by obtaining the benzylidene derivative (IV) from (III). If the azodicarboxylic ester is reacted with 2,4-dimethyl pentadiene-1,3, two adducts (Va) and (Vb) (in reality their mixture) can be formed, since the mentioned pentadiene contains two types of methyl groups. After hydrogenation, however, both (Va) and (Vb) yield the same substituted hydrodicarboxylic ester (VI). By hydrolysis of (VI), the monosubstituted hydrazine (VII) is formed from which the benzylidene derivative (VIII) can be obtained. In addition, nitrogen is evolved under the action of mercuric oxide, with (VII) being converted to 2,4-dimethyl pentane (which is a reaction characteristic of monoalkyl hydrazines, reference 4). All these reactions are clearly indicative of the acyclic structure of the corresponding adducts. Obviously, the dienes used in this case react with the azodicarboxylic ester through a single methyl group only. An analogous reaction between maleic anhydride and olefines (Ref 8) takes place only at  $200-250^\circ$ , while the much more active azodicarboxylic ester reacts already at  $20-50^\circ$ . There are 9 references, 3 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova  
(Moscow State University imeni M. V. Lomonosov)

Card 2/3

On the Interaction Between Azodicarboxylic Esters  
and hem-Dialkyl Butadienes

69998

S/020/60/131/05/027/069  
B011/B117

PRESENTED: December 14, 1959, by A. N. Nesmeyanov, Academician

SUBMITTED: December 12, 1959

Card 3/3

SHABAROV, Yu.S.; LEVINA, R.Ya.; KUZ'MIN, M.G.; VASIL'YEV, N.I.; DAMIR, N.A.

Cyclopropanes and cyclobutanes. Part 11: Methylphenylcyclobutanes.  
Zhur.ob.khim. 30 no.10:3210-3214 0 '61. (MIRA 14:4)

1. Moskovskiy gosudarstvennyy universitet.  
(Cyclobutane)

45158

S/020/63/148/002/034/037  
B124/B186

5.4500  
AUTHORS:

Kuz'min, M. G., Berezin, I. V.

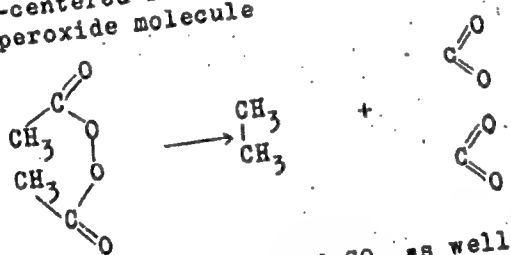
TITLE:

A new type of hydrogen exchange in the photolysis of some organic compounds

PERIODICAL:

Akademiya nauk SSSR, Doklady, v. 148, no. 2, 1963, 377-379

TEXT: The photochemical decomposition of acetyl-peroxide, dissolved in hydrocarbons, was studied by hydrogen isotope tagging. It was found that an ordinary six-centered rearrangement of the light-absorbing electron-excited acetyl peroxide molecule



causes the formation of methane and CO<sub>2</sub> as well as up to 25% of ethane.  
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A new type of hydrogen exchange...

S/020/63/148/002/034/037  
B124/B186

Methane arises by the removal of hydrogen atoms (in deuterium- or tritium-tagged solvents by the removal of one deuterium or tritium atom) from the solvent by methyl radicals. Small amounts of ethane are formed by cellular recombination. In the photolysis of acetyl peroxide in tritium-tagged saturated acyclic (n-heptane) and alicyclic (cyclohexane) hydrocarbons, ethane with a high tritium content is formed; the tritium content in methane is higher than in the case of thermal decomposition under the same conditions. In the photolysis of acetyl peroxide in deuterio-cyclohexane only  $C_2H_6$  and  $C_2H_6D$  arise; the tritium content in ethane and methane is practically independent of temperature. The exchange takes place also in the photolysis in solid phase (at 77°K). Evidently the solvent participates in the formation of ethane from the electron-excited peroxide molecule in the photolysis of acetyl peroxide in saturated hydrocarbons. This photolysis causes the substitution of one hydrogen atom in the initial peroxide by one hydrogen atom of the solvent and is characterized by a very slight isotopic effect. This process is molecular, which is proved by the substitution of only one hydrogen atom in ethane and by the relatively low tritium content in methane. The increase in the tritium content of methane in the photolysis is probably related to the decomposition of a small portion of the exchanging acetyl peroxide molecules to methyl radicals, or

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A new type of hydrogen exchange...

S/020/63/148/002/034/037  
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possibly to the reaction of the "hot" methyl radicals with the solvent. The decrease in the tritium content in ethane in the course of photolysis in the solid phase is explained by the dilution of the exchanging ethane with light ethane, formed by recombination of the methyl radicals. In aromatic hydrocarbons (benzene, toluene) no exchange takes place between their hydrogen atoms and the excited acetyl peroxide molecules. Their presence does not affect the exchange reaction with aliphatic hydrocarbons, which proves that the aromatic compounds do not inactivate the excited peroxide molecules. The addition of radical acceptors (iodine, anthracene) proves to be ineffective. In the photolysis of azomethane in heptane under the conditions mentioned a decomposition into nitrogen, methane and non-tagged ethane takes place at a wavelength of  $365\text{ m}\mu$ . At  $254\text{ m}\mu$  exactly the same exchange reaction takes place as with acetyl peroxide. There is 1 table.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova  
(Moscow State University imeni M. V. Lomonosov)  
PRESENTED: July 27, 1962, by N. N. Semenov, Academician  
SUBMITTED: July 17, 1962  
Card 3/3

KUZ'MIN, M.G.

"Negative temperatures" in reversible photochemical reactions.  
Dokl. AN SSSR 151 no.6:1371-1374 Ag '63. (MIRA 16:10)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova.  
Predstavleno akademikom N.N.Semenovym.

UZHINOV, B.M.; KUZ'MIN, M.G.; MOROZOV, Yu.V.; BEREZIN, I.V.

Basicity of excited singlet and triplet states of some aromatic hydrocarbons. Vest. Mosk. un. Ser. 2: Khim. 19 no.5:62-64 S-0 '64.  
(MIRA 17:11)

1. Kafedra khimicheskoy kinetiki Moskovskogo universiteta.

KUZ'MIN, M. I.,

"Semifattening of Hogs with Large Quantities of Chopped Hay and Juicy Fodder."  
(Dissertation for Degree of Candidate of Agricultural Sciences) Kazan' State Veterinary  
and Zootechnical Inst imeni N. E. Bauman, (Kazan'), 1954

SO: M-1036 28 Mar 56

KUZ'MIN, M.I.

Operation of the Dmitrovo-Cherkasskoye Peat Briquetting plant.  
Torf. prom. 35 no. 4:31-32 '58. (MIRA 11:7)

1. Direktor Dmitrovo-Cherkasskogo torfobriketnogo predpriyatiya.  
(Briquets(Fuel))  
(Peat)

KUZ'MIN, M.I., inzh.

Work practices of the Dmitrovo-Cherkasovo Peat Briquet Plant.  
Torf. prom. 40 no.2:28-30 '63. (MIRA 16:4)

1. Direktor Dmitrovo-Cherkasskogo torfopredpriyatiya.  
(Kalinin Province--Peat industry)  
(Briquets(Fuel))

KUZ'MIN, M.I.

Using new hammer hardening techniques for finishing workpiece  
surfaces. Trudy Sam. po kach. poverkh. no.1:42-60 '51.(MLBA 10:8)  
(Surfaces (Technology)) (Metals--Hardening)



KUZ'MIN, M.I., inzh.; ANDREYEV, V.M., prof., otv.red.; LUKIN, O.A.,  
inzh., red.; FREGER, D.P., tekhn.red.

[New method for finishing surfaces of parts by cold hardening]  
Novyi metod otdelki poverkhnostei detalei naklepyvaniem.  
Leningrad, 1952. 21 p. (Informatsionno-tekhnicheskii listok,  
no.14 (355)). (MIRA 14:6)

1. Leningradskiy Dom nauchno-tekhnicheskoy propagandy.  
(Metals—Finishing)

KUZ'KIN, M. I.

RT-1062 (Science-industry cooperation in machine studies) Abridged from: Iz opyta  
sodruzhestva nauki i proiz. odstva.

Vestnik Akademii Nauk SSSR, 22(4): 15-19, 1952

D'YACHKOV, A. K.; KUZ'NETS, M. I.

Research, Industrial

Cooperation between science and industry.  
Vest. AN SSSR 22 no. 4, 1952

Monthly List of Russian Accessions, Library of Congress, September 1952. UNCLASSIFIED.

SOV/137-57-1-1096

Translation from: Referativnyy zhurnal. Metallurgiya, 1957, Nr 1, p 141 (USSR)

AUTHOR: Kuz'min, M. I.

TITLE: A Method of Hardening and Finishing of Surfaces of Machine Parts by Cold Working With the Aid of Special Hardening Devices (Metod uprochneniya i otdelki poverkhnostey detaley mashin naklepyvaniyem uprochnitelyami)

PERIODICAL: V sb.: Povysheniye dolgovechnosti mashin. Moscow, Mashgiz, 1956, pp 115-133

ABSTRACT: Compared with shot peening and other methods of hardening (designed to increase the fatigue and corrosion-fatigue strength), the method described offers the following advantages: The process is readily controlled; a high-quality surface finish is obtained; the method is applicable to internal and complex surfaces, is inexpensive and is characterized by high productivity (up to 500 cm<sup>2</sup>/min) The hardening device (HD) is mounted on the spindle of a grinding machine or on the face plate of a metal lathe. As the HD is set into rotary motion, metal balls (B), loosely encased in radial slots distributed uniformly along the periphery of the disk or the

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A Method of Hardening and Finishing of Surfaces of Machine Parts (cont.) SOV/137-57-1-1096

mandrel, impinge upon the surface of the component (C) under the action of the centrifugal force at a frequency of up to 1,000,000 impacts per minute. Transverse and longitudinal feed combined with rotation of the C ensure that each B always impinges on a different point. The process of strain hardening is controlled by the following factors: The number of revolutions of the HD; the extent of forced displacement of the B as it comes in contact with the C; the diameter of the B; the peripheral speed of the C; the number of B's in the HD, etc. Experimental data dealing with the effect of each of the parameters listed are presented together with diagrams of the necessary jigs, various designs of HD's, tables of conditions required for hardening, depths of the hardened layer, and strength characteristics of various metals and alloys. It is pointed out that C's with grinding ranging from 10 to 780 mm were hardened on a rotary polishing machine equipped with an HD with a diameter of 270 mm, while C's with diameters of 40-170 mm were treated on a metal lathe equipped with an HD with a diameter of 78 mm.

R. B.

Card 2/2

Work-Hardening and Burnishing of Gear Teeth

Povysheniye iznosostoykosti i srzka sluzhby mashin. t. 2 (Increasing the Wear Resistance and Extending the Service Life of Machines. v. 2) Kiyev, Izd-vo AN UkrSSR, 1960. 290 p. 3,000 copies printed. (Series: Its: Trud, t. 2)

Sponsoring Agency: Vsesoyuznoye nauchno-tekhnicheskoye obshchestvo mashinostroyitel'noy promyshlennosti. Tsentral'noye i kiyevskoye oblastnoye predstavleniye. Institut mekhaniki AN UkrSSR.

Editorial Board: Resp. Ed.: B. D. Grozin; Deputy Resp. Ed.: D. A. Praygor; M. P. Braun, I. D. Faynerman, I. V. Kragel'skiy; Scientific Secretary: M. L. Sarabash; Ed. of v. 2: Ya. A. Samokhvalov; Tech. Ed.: N. P. Rakhlin.

COVERICE: The collection contains papers presented at the Third Scientific Technical Conference held in Kiyev in September 1957 on problems of increasing the wear resistance and extending the service life of machines. The conference was sponsored by the Institut stroitel'noy mekhaniki AN UkrSSR (Institute of Structural Mechanics of the Academy of Sciences Ukrainian SSR), and by the Kiyevskoye oblastnaya organizatsiya nauchno-tekhnicheskogo obshchestva mashinostroyitel'noy promyshlennosti (Kiyev Regional Organization of the Scientific Technical Society of the Machine-Building Industry).

1-1700

S/123/61/000/009/012/027  
A004/A104

AUTHOR: Kuz'min, M.I.

TITLE: Hardening and finishing of gear tooth profiles by cold working

PERIODICAL: Referativnyy zhurnal, Mashinostroyeniye, no. 9, 1961, 84, abstract  
9B617 (V sb. "Povysheniye iznosostoykosti i sroka sluzhby mashin, v.  
2", Kiyev, AN UkrSSR, 1960, 47 - 56)

TEXT: The author describes a device -П(-4375 (PS-4375) - for the cold working of gear teeth profiles on the type 736 transverse planing machine. He presents the cold-working conditions for the evolute tooth part and the tooth space bottom. Fatigue tests of the gear teeth showed that hardening by cold working increases their endurance limit (by 30-50%) and service life. There are 11 figures and 5 references.

N. Il'ina

[Abstracter's note: Complete translation]

Card 1/1

KUZ'MIN, M.I., inzh. (g.Fergana)

The Great Fergana Canal. Gidr. 1 mel. 17 no.3:1-9 Mr '65.

(MIRA 18:4)



KUZ'MIN, M.Kh., inzh.; OBYSOV, A.N., inzh.

Assembling the electric equipment for the slabbing mill of the  
Magnitogorsk Metallurgical Combine. Nov.tekh.mont.i spets.rab.v  
stroi. 21 no.9:1-4 S '59. (MIRA 12:11)

1. Magnitogorskoye montazhnoye upravleniye tresta Elektromontazh-  
Glavelektromontazh.  
(Magnitogorsk--Rolling mills--Electric equipment)

1. KUZ'MIN, M. K.
2. USSR 600
4. Physicians
7. F. V. Ovsyannikov as a hygienist; 125th anniversary of his birth, *Gig. i san*, No. 12, 1952.

9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.

KUZ'MIN, M.K.

Outstanding Russian neurologist F.V.Ovsiannikov. Zhur. nevr. i  
psikh. 54 no.11:948-950 N '54. (MLRA 8:1)

(NEUROLOGY, history,

in Russia, contribution of F.V.Ovsiannikov)

(OVSIANNIKOV, FILIP VASIL'EVICH, 1827-1906)

KUZ'MIN, M. K.

Kuz'min, M. K.

"The Achievements of Soviet Medicine and Biology in the Works of Academician F. V. Ovsyannikov and His Students." First Moscow Order of Lenin Medical Inst., Moscow, 1955. (Dissertation for the Degree of Candidate in Medical Science)

So: Knizhnaya letopis', No. 27, 2 July 1955

KUZ'MIN, M. K. ~~4~~

7877. Aleksandrov, O. A., KUZ'MIN, M. K. I Lisitsin, Yu. P. metodicheskoye posobiye k seminarskim zanyatiyam po istorii otechestvenn oy meditsiny. M., 1955. 23S. 21 Sm. (1-y mosk. ordena lenina med. In-T. Kafedra istorii meditsiny). 500 EKS. B. Ts.--avt. ukazany na oborote lit. L.--"Literatura K seminarskim zanyatiyam po istorii otechestv. me- ditsiny", S. 23,28--(55-4008)

61(47)(09)(077)/(016.3)

SO: Knizhuaya Letopis', Vol. 7, 1955

OVSYANNIKOV, F.V.; BORODULIN, F.R., professor, redaktor; KUZ'MIN, M.K.;  
MAKAROV, Yu.T. [translator] (deceased); GUSTATINSKAYA, V.S.,  
kandidat filologicheskikh nauk [translator] ZASUKHIN, D.N., doktor  
biologicheskikh nauk, redaktor; KONDRAT'YEV, S.P., professor,  
redaktor; GLUKHOYEKOVA, G.A., tekhnicheskii redaktor.

[Selected works] Izbrannye proizvedeniia. Moskva, Gos.izd-vo med.  
lit-ry, 1955. 398 p. (MLRA 8:10)  
(BIOLOGY)

KUZ'MIN, M.K.

Contributions of A.A. Kuliabko to the problem of resuscitation.  
Sovet.med. 19 no.5:89-93 My '55. (MLRA 8:8)

1. Iz kafedry istorii meditsiny (sav.-prof. F.R. Borodulin) i  
Moskovskogo ordena Lenina meditsinskogo instituta.

(RESUSCITATION

contribution of A.A. Kuliabko)

(BIOGRAPHIES

Kuliabko, A.A.)

~~KUZ'MIN~~ M., kandidat meditsinskikh nauk, assistant; KOVANOVA, V.V., professor,  
redaktor; ZAKHAROVA, A.I., tekhnicheskii redaktor

[The I.M. Sechenov First Moscow Medical Institute; short manual]  
Pervyi Moskovskiy ordena Lenina meditsinskiy institut imeni I.M.  
Sechenova; kratkii spravochnik. Pod red. V.V. Kovanova. Moskva,  
Gos. izd-vo med. lit-ry, 1957. 150 s. (VWR 10:10)

1. Moscow, Pervyy Moskovskiy meditsinskiy institut. 2. Kafedra  
istorii meditsiny, I Moskovskogo ordena Lenina meditsinskogo insti-  
tuta imeni I.M. Sechenova (for Kuz'min)  
(MOSCOW--MEDICAL COLLEGES)



KUZ'MIN, M.K. (Moskva)

The first histology professor in Kiev, P.I. Peremezhko (1833-1893)  
Arkh. pat., 19 no.3:66-69 '57 (MLRA 10:5)

1. Iz kafedry istorii meditsiny (zav.-prof. F.R. Borodulin  
[deceased] i Moskovskogo ordena Lenina meditsinskogo instituta imeni  
I.M. Sechenova.

(BIOGRAPHIES

Peremezhko, P.I.)

(HISTOLOGY

contribution of P.I. Peremezhko)

KUZ' MIN, M.K. (Moskva)

F.A.Andreev, an outstanding Soviet pathophysiologist and clinician;  
1879-1952. Fel'd. 1 akush. 22 no.8:38-43 Ag '57. (MIRA 10:12)  
(ANDREEV, FEDOR ANDREEVICH, 1879-1952)

KUZ' MIN, M.K., kand.med.nauk

Studies of F.V. Ovsiannikov in the field of physiology.  
Vest.AMH SSSR 13 no.9:82-86 '58 (MIRA 11:10)  
(PHYSIOLOGY,  
contribution of F.V. Ovsiannikov (Rus)  
(OVSIANNIKOV, FILIPP VASIL'EVICH, 1827-1906)

KUZ'MIN, M.K., kand.med.nauk (Moskva)

Earliest information on the revival of dead people in Russia. Fel'd  
i akush. 24 no.8:29-32 Ag '59. (MIRA 12:12)  
(RESUSCITATION)

BELOVA, A.A., kand.meditssinskikh nauk; KUZ'MIN, M.K., kand.  
meditsinskikh nauk

Dedication of a monument to Professor F.R. Borodulin. Sov.  
zdrav. 19 no. 4:87 '60. (MIRA 13:10)  
(BORODULIN, F.R., d. 1956)

KUZ'MIN, M.K.; POTEKAYEV, N.S. (Moskva)

On N.S. Toporov. Sov. zdrav. 19 no. 8:73-75 '60. (MIRA 13:10)

1. Iz kafedry istorii meditsiny (zav. B.D. Petrov) I Moskovskogo  
ordena Lenina meditsinskogo instituta imeni I.M. Sechenova.  
(TOPOROV, N.S., 1803-)

KUZ'MIN, M.K.; ROZOVA, K.A. (Moskva)

"Surgeon's notes" by V.E.Salishchev. Reviewed by M.K.Kuz'min,  
K.A.Rozova. Fel'd. 1 akush. 25 no.11:62-64 N '60. (MIRA 13:11)  
(SALISHCHEV, VSEVOLOD ERASTOVICH)

KUZ'MIN, Mikhail Kuz'mich; RAKIMANOV, V.B., red.; RAYKO, N.Yu.,  
tekh. red.

[Lectures on the history of Russian medicine] Lektsia po  
istorii russkoi meditsiny. Moskva, Pervyi MOINI im. I.M.  
Sechenova, Lecture 1. [Medicine in old Russia] Meditsina  
Drevnei Rusi. 1961. 44 p. (MIRA 15:2)  
(MEDICINE--HISTORY)



BORODULIN, Feodosiy Romanovich, prof. (1896-1956); KUZ'MIN, M.K., dots.; LISITSIN, Yu.P., kand. med. nauk; ALEKSANDROV, O.A.; LUSHNIKOV, A.G., red.; ZUYEVA, N.K., tekhn. red.

[History of medicine; selected lectures] Istoriia meditsiny; izbrannye lektsii. Moskva, Medgiz, 1961. 251 p.

(MIRA 15:3)

(MEDICINE)

KUZ'MIN, M.K., dotsent

Patriotic and scientific achievements of surgeon I.A.Birillo  
(1900-1945). Sov.med. 26 no.6:143-144 Je '62. (MIRA 15:11)  
(BIRILLO, I.A., 1900-1945)

KUZ'MIN, Mikhail Kuz'mich; LUSHNIKOV, A.G., red.; MATVEYEVA,  
M.M., tekhn. red.

[Academician F.V.Ovsiannikov; the history of nervosism in  
Russia] Akademik F.V.Ovsiannikov; k istorii nervizma v Ros-  
sii. Moskva, Medgiz, 1963. 218 p. (MIRA 16:6)  
(NEUROLOGY)  
(OVSIANNIKOV, FILIPP VASIL'EVICH, 1827-1906)

KUZ'MIN, M.K. (Moskva)

Medicine and medicine in the Patriotic War of 1812. Sov.med. 26  
no.1:142-144 Ja '63. (MIRA 16:4)  
(RUSSIA--INVASION OF 1812--MEDICAL AND SANITARY AFFAIRS)

KUPRIYANOV, Vasil'y Vasil'yevich; KUZ'MIN, M.K., red.

[Andreas Vesalius in the history of anatomy and medicine]  
Andrey Vezalii v istorii anatomii i meditsiny. Moskva,  
Meditsina, 1964. 135 p. (MIRA 18:3)

KUZ'MIN, M.K., dotsent (Moskva)

Sources of Russian medical literature; on the 400th anniversary of  
book printing in Russia. Sov. med. 27 no.3:145-146 Mr '64.  
(MIRA 17:11)

KUZ'MIN, Mikhail Kuz'mich, dots.; GRISHKOVA, A.Ya., red.

[Medic Heroes of the Soviet Union] Mediki - Geroi  
Sovetskogo Soiuza. Moskva, Meditsina, 1965. 95 p.  
(MIRA 18:5)

KUZ'MIN, M.M.; KRASOVSKIY, B.M.

Designing city gas-supply systems. Gaz. prom. 8 no.7:41-42  
'63. (MIRA 17:8)



27549

S/170/61/004/010/003/019

B109/B125

24.5200

AUTHOR: Kuz'min, M. P.

TITLE: Electric simulation of unsteady thermal processes in a plane wall

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, v. 4, no. 10, 1961, 15 - 20

TEXT: The author gives directives for the dimensions of an electric integrator. The equations of an unsteady thermal process in a plane wall may be transformed into the electrical equations that hold for the network in Fig. 1. With boundary conditions of the third kind, this can be accomplished by substituting the electrical tension  $u$  for the temperature  $T$ , the electrical conductivity  $1/r$  for the thermal conductivity  $\lambda$ , the electric capacitance  $c_e$  for the specific heat  $c$ , and  $1/rc_e$  for the temperature conductivity  $a$ . The six electrical parameters  $r$ ,  $c_e$ ,  $n$ ,  $R_r$ ,  $R_B$ , and  $k_T$  have to be interrelated with the thermal parameters  $\alpha_r$  and  $\alpha_B$ , and with the wall thickness  $\delta$  in order to be able to establish an electrical

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Electric simulation of...

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B109/B125

simulation of a thermal process.  $n$  denotes the number of members in the two-terminal network,  $k_r = \tau/\tau_e$ ,  $\tau$  and  $\tau_e$  are the time scales of the thermal and of the electrical process, respectively.  $\alpha_r$  and  $\alpha_B$  are the heat transfer coefficients of the media left and right of the wall, respectively. Comparison between the electrical and thermal differential equations yields three relationships:  $\alpha_B/\alpha_r = R_r/R_B$ ,  $\frac{\delta}{a} = \lambda r/\alpha_r R_r$ ,  $k_r = \frac{\delta^2}{a} \frac{1}{rc_e n^2}$ . The remaining three quantities may be chosen freely.

There are 1 figure, 1 table, and 3 Soviet references.

ASSOCIATION: Mekhanicheskii institut, g. Tula (Mechanical Engineering Institute, Tula)

SUBMITTED: March 14, 1961

Card 2/3

KUZ'MIN, M.P.; CHILEYKO, T.I., red.

[Ele trical simulation of some nonsteady thermal proces-  
ses] Elektromodelirovanie nekotorykh nestatsionarnykh  
teplovykh protsessov. Moskva, Izd-vo "Energia," 1964.  
119 p. (MIRA 17:7)

*KUZ' MIN, M.S.*

USSR/Soil Science - Cultivation, Amelioration, Erosion.

J-4

Abs Jour : Ref Zhur - Biol., No 2, 1958, 5817.

Author : Godunov, N.T., Kuz'min, M.S.

Inst : Stalingrad Agricultural Institute

Title : Experience in the Reclamation of Solonchak Soils Planted With Tree Groves.

Orig Pub : Tr. Stalingradsk. s.-kh. in-ta, 1956, 6, 174-183

Abstract : The reason why the parks planted around the Stalingrad Electric Station dried up was because the soil became saline; this is seen as a result of the rise of the mineralized ground waters. The chloride-sulfate salination of the upper soil horizons reaches 0.210-1.688%, and at a depth of one meter it is 0.460-1.68%. Recommended is the use of drainage, flushing, and regular sprinkling. Trukestan, Canadian, (*Populus molinifera*) and black poplars should be

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USSR/Soil Science - Cultivation, Amelioration, Erosion.

CIA-RDP86-00513R000928020

J-4

Abs Jour : Ref Zhur - Biol., No 2, 1957, 5817

included in the trees planted in the park, as well as white acacia, small-leaved elm, and narrow-leaved oleaster.

Card 2/2

KUZ'MIN, N. (Leningrad)

Fame is achieved by work. Vest.prom.1 khud.promys. 3 no.12:5-6  
D '62. (MIRA 16:2)

(Leningrad—Clothing workers)

KUZ'MIN, N., polkovnik zapasa

Flame of eternal glory. Voen. znan. 39 no.5:9 My '63.

(MIRA 16:5)

(Novorossiysk—War memorials)

KUZ'MIN, N., polkovnik zapasa

Beloved Sevastopol. Kryl. rod. 15 no.515 My '64.  
(MIRA 17:8)

KUZ'MIN, IV. A.

KYZ'MIN, N.A. [deceased]

Subcutaneous traumatic lacerations of the spleen. Khirurgia  
35 no.12:66-68 D '59. (MIRA 13:6)

1. Iz khirurgicheskogo otdeleniya (zav. N.A. Kuz'min [deceased])  
Kol'chuginskoy gorodskoy bol'nitsy (glavnyy vrach M.I. Sedova).  
(SPLEEN wds & inj.)

*Sedova*



LARIONOV, A.P., kand.vet.nauk; MUZ'MIN, N.A., vetvrach

Detection of the agents of paratyphoid toxinfections by means of  
fluorescent antibodies. Veterinariia 36 no.3:68-73 Mr '59.

(MIRA 12:4)

(Antigens and antibodies) (Fluorescence microscopy)  
(Salmonella)

PRITULIN, P.I., kand.veterinarnykh nauk; KUZ'MIN, N.A., veterinarnyy  
vrach

Rapid diagnosis of anthrax by use of luminescent antibodies.  
Veterinariia 36 no.7:69-73 J1 '59. (MIRA 12:10)  
(Anthrax) (Antigens and antibodies)

KUZMIN, N. A., LARIONOV, A. P. and ZALESSKI, L. P.

"The quickest finding of paratyphoid bacteria in meat."

Veterinariya, Vol. 37, No. 5, 1960, p. 85

*Kuzmin - Sr. Sci. Collaborator*

KUZ'MIN, N.A.

Adsorption of sera for luminescence analysis. Zhur.mikrobiol., epid.  
i immun. 33 no.3:23-27 Mr '62. (MIRA 15:4)  
(SERUM DIAGNOSIS) (ANTIGENS AND ANTIBODIES)

15(2)

SOV/72-59-10-12/14

AUTHOR: Kuz'min, N. A.

TITLE: A Paste for the Removal of Gold Stains on Products

PERIODICAL: Steklo i keramika, 1959, Nr 10, pp 46 - 47 (USSR)

ABSTRACT: On the basis of experiments, the author developed a special paste for the removal of stains which consists of micropowders and beeswax. 14 units of weight of heated, liquid wax, 65 units of weight of the powder EB-M20-28, and 21 units of weight of the powder KZ-M14-20 were carefully mixed for the preparation of the paste, and poured into gypsum molds. A felt washer of 100-150 mm in diameter is covered with the paste and used on the spindle of an electric motor with 1000-1500 rpm for the removal of the stains (Fig 1), or else the paste is used in the form of a chalk-stick (Figs 2 and 3). There are 3 figures.

ASSOCIATION: Leningradskiy farforovyy zavod imeni Lomonosova (Leningrad Porcelain Works imeni Lomonosov)

Card 1/1

KU2<sup>3</sup>MIN, N.A.

Bench press. Mashinostroitel' no.6:29 Je '64. (MIRA 17:8)

Kuz'min, N.A.

Table press for the manufacture of rubber stamps. Stek. 1  
ker. 21 no.9:38 S '64. (MIRA 18:4)

ABSTRACT: An Author Certificate has been issued for a paste suitable for simultaneous grinding and polishing of metals and plastics. The paste consists of white aluminum, green silicon carbide, and petrolatum binder with added wax, paraffin, and rosin.

ASSOCIATION: none

Card 1/1



KUZ'MIN, N. A.

N. A. KUZ'MIN, "Electromagnetic wave propagation along curved waveguides." Scientific Session Devoted to "Radio Day", May 1958, Trudrezervizdat, Moscow, 9 Sep. 58

Questions of the theory of electromagnetic wave propagation along curves surfaces are analyzed. The possibility is shown of representing the electromagnetic field by means of two scalar functions. The relations found permit the extension of the concept of the Scalar Hertz function to more complicated curvilinear space. Fields are found by the perturbation method for certain kinds of waves in a waveguide of arbitrary transverse section. Questions of connecting a regular and curved waveguide are analyzed.

The perturbation method is extended to the solution of external problems with surface waves being propagated along a curved conductor with finite conductivity. Second order corrections are found which indicate the separation of the surface waves because of the curvature.

Functional relations for the scalar functions which reduce the bending problem to a variational problem are written.

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S/141/61/004/006/012/017

E192/E382

9.1300

AUTHORS: Kuz'min, N.A. and Makarov, T.V.

TITLE: Electromagnetic waves in a cross-shaped waveguide consisting of a number of sectors

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, v. 4, no. 6, 1089 - 1098, 1961

TEXT: The system considered is illustrated in Fig. 1a, where the relevant geometrical parameters are indicated. Determination of fields and critical frequencies of the electromagnetic waves of E- and H-types in a regular ideally-conducting waveguide (such as shown in Fig. 1) is based on the solution of the scalar equations of the type:

$$\Delta \begin{pmatrix} \psi \\ \psi \end{pmatrix} + \begin{pmatrix} \kappa \\ \kappa \end{pmatrix}^2 \begin{pmatrix} \psi \\ \psi \end{pmatrix} = 0 \quad (1)$$

with the following boundary conditions:

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E192/E382

Electromagnetic waves ....

a) for magnetic waves -

$$\partial \tilde{\Psi} / \partial n|_L = 0 \quad (2)$$

b) for electric waves -

$$\Psi|_L = 0 \quad (3)$$

These boundary conditions apply on the contour  $L$  of the transverse cross-section  $S_{\perp}$  of the waveguide. The operator

$\Delta$  in Eq. (1) is the two-dimensional Laplace operator;  $\tilde{\Psi}$  and  $\Psi$  are eigen values of magnetic and electric waves, respectively;  $\underline{n}$  is the external normal to the contour.

The functions  $\tilde{\Psi}$  and  $\Psi$  are the longitudinal components of the magnetic and electric Hertz vectors, which are related to the longitudinal field components by the following equations

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Electromagnetic waves ....

$$H_z = \tilde{\kappa}^2 \tilde{\Psi} ; \quad E_z = \kappa^2 \Psi$$

and

$$\begin{pmatrix} \tilde{\kappa} \\ \kappa \end{pmatrix} = k^2 - \begin{pmatrix} \tilde{h} \\ h \end{pmatrix}^2$$

where  $\tilde{h}$  and  $h$  are propagation constants of the magnetic and electric waves, respectively. It is known that the extremum functionals, whose Euler equations are in the form of Eqs. (1), are in the form:

$$\begin{pmatrix} \tilde{\kappa} \\ \kappa \end{pmatrix}^2 = \int \int_{S_{\perp}} \left( \nabla \begin{pmatrix} \tilde{\Psi} \\ \Psi \end{pmatrix} \right)^2 dS_{\perp} \quad (4)$$

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E192/E382

Electromagnetic waves ....

under the conditions that:

$$\int_{S_{\perp}} \left\{ \begin{matrix} \hat{\Psi} \\ \Psi \end{matrix} \right\}^2 dS_{\perp} = 1 \quad (5)$$

where  $\nabla$  is the two-dimensional Hamiltonian operator. The eigen values and the eigen functions can be determined by using the Ritz method, according to which the approximate solutions are in the form of a series:

$$u_n = \sum_{i=1}^n a_i \varphi_i \quad (6)$$

where  $a_i$  are unknown coefficients. The function

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E192/E382

Electromagnetic waves ....

$\varphi_i$  (Ref. 1: S.G. Mikhlin: Direct Methods in Mathematical Physics, GITTL, M-L, 1950) should satisfy the boundary condition of Eq. (3). A sequence of functions of  $\varphi_i$  should form a complete linearly-independent system. The coefficients  $a_i$  are chosen by finding the minimum for Eq. (4) under the condition expressed by Eq. (5). First, the magnetic waves are considered and it is pointed out that the eigen value of Eq. (2) for the condition of Eq. (2) for a cylindrical waveguide is given by the first root of the equation  $J_1^0(x) = 0$ , which is equal to  $1.84/a$ , where  $a$  is the internal radius of the cylinder. Two degenerate magnetic waves of the  $H_{11}$  type correspond to this eigen value in a circular waveguide. The approximate solution of Eq. (6) for the quasi- $H_{11}$  wave in a cross-shaped waveguide of Fig. 1a is therefore assumed to be in the form:

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E192/E382

Electromagnetic waves ....

$$\tilde{q}_1 = \sum_n a_n J_n(1.84 r/a) [\cos(n\varphi) - \sin(n\varphi)] \quad (n = 1, 2, 3, \dots)$$

On the basis of this equation, a set of graphs is constructed for the eigen value  $b\tilde{x}_1$  of the quasi- $H_{11}$  wave as a function of  $\Theta$  or  $\mu = b/a$  (for various values of  $\mu$  or  $\Theta$ ). This is shown in Fig. 2. Similar solutions are determined for the quasi- $H_{21}$  and  $H_{01}$  waves. With regard to the critical frequency of the principal electric wave (quasi- $E_{01}$ ), this is determined by calculating the minimum non-zero eigen value of Eq. (1), subject to the conditions of Eq. (3). It is shown that the coordinate functions in this case are composed of a system of functions consisting of a product of function  $\omega(r, \varphi)$  and various combinations of trigonometric and Bessel functions:

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S/141/61/004/006/012/017  
E192/E382

Electromagnetic waves ....

$$\psi_1 = \omega(r, \varphi) \left\{ a_0 + \sum_n a_{n+1} J_n(2.405r/a) [\cos(n\varphi) - \sin(n\varphi)] \right\}$$

$$(n = 0, 1, 2, 3, \dots)$$

where  $\omega(r, \varphi)$  is a continuous function having finite and continuous derivatives inside the region  $S_1$ . The coordinate functions  $\psi_i$  are also determined for the quasi- $E_{11}$  waves. The results are illustrated in some graphs and tables, from which it is seen that no degeneration takes place between  $H_{01}$  and  $E_{11}$  waves in a cross-shaped waveguide. It is therefore possible to use such a waveguide for transmitting  $H_{01}$  waves in waveguide bends. There are 6 figures, 5 tables and 3 Soviet-bloc references.

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Electromagnetic waves .....

S/141/61/004/006/012/017  
E192/E382

ASSOCIATION: Tsentral'nyy nauchno-issledovatel'skiy  
institut svyazi, Moskva (Central Scientific  
Research Institute of Communications, Moscow)

SUBMITTED: April 15, 1961

Card 8/8

30430  
S/109/61/006/012/005/020  
D266/D305

9,1300

AUTHORS: Kuz'min, N.A., and Makarov, T.V.

TITLE: Electromagnetic waves in rectangular cross-shaped waveguides

PERIODICAL: Radiotekhnika i elektronika, v. 6, no. 12, 1961, 1989 - 1997

TEXT: The authors' purpose is to determine the electric and magnetic field configuration for a number of modes in the cross-shaped waveguide. The partial differential equation

$$\Delta \left\{ \begin{matrix} \tilde{\psi} \\ \psi \end{matrix} \right\} + \left\{ \begin{matrix} \tilde{x} \\ x \end{matrix} \right\}^2 \left\{ \begin{matrix} \tilde{\psi} \\ \psi \end{matrix} \right\} = 0 \quad (1)$$

is solved approximately with the aid of the Maleigh-Ritz method, i.e. the integral

$$\left\{ \begin{matrix} \tilde{x} \\ x \end{matrix} \right\}^2 = \iint_{S_1} (\nabla \cdot \left\{ \begin{matrix} \tilde{\psi} \\ \psi \end{matrix} \right\})^2 dS_1 \quad (4)$$

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S/109/61/006/012/005/020  
D266/D305

Electromagnetic waves in ...

is minimized. In (1) and (4)  $\tilde{\psi}$  and  $\psi$  stand for the transverse wave functions of the H and E modes respectively,  $\tilde{\kappa}$  and  $\kappa$  are the respective eigenvalues (cut-off wave numbers) of the above modes. The nth approximation of the wave function is written in the following form:

$$u_n = \sum_{i=1}^n a_i \varphi_i \quad (6) \quad 4$$

where the  $\varphi_i$  functions satisfy the boundary conditions and the  $a_i$  coefficients are chosen to satisfy the equation system

$$\sum_{i=1}^n a_i [(\nabla \varphi_i, \nabla \varphi_j) - \{\tilde{\kappa}\}_{\kappa}^2 (\varphi_i, \varphi_j)] = 0; \quad j = 1, 2, 3, \dots, n. \quad (7)$$

where the brackets denote scalar multiplication. For the first H mode the trial function is assumed as follows:

$$\tilde{\psi}_1 = a_1 \sin \frac{\pi x}{2a} - a_2 \sin \frac{\pi y}{2a} + a_3 \sin \frac{3\pi x}{2a} - a_4 \sin \frac{3\pi y}{2a}.$$

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D266/D505

Electromagnetic waves in ...

where  $a$  is the width of the waveguide (see Fig. 1). The eigenvalues resulting from the first and fourth approximations can be seen in Table 1 as a function of  $\sigma = b/2a$ . If  $\sigma \rightarrow 1$  this mode agrees with the sum of the  $H_{01}$  and  $H_{10}$  modes in the square waveguide. For this reason the author calls this mode a quasi- $(H_{10} + H_{01})$  mode (Fig. 1a)

In a similar manner the properties of a number of other modes are calculated namely quasi- $H_{11}$  (Fig. 1b), quasi- $(H_{20} + H_{02})$  (Fig. 1c), quasi- $(H_{12} + H_{21})$  (Fig. 1d), quasi- $H_{22}$  (Fig. 1e), quasi- $(H_{30} + H_{03})$  (Fig. 1f), quasi- $(H_{40} - H_{04})$  (Fig. 1g), quasi- $E_{11}$  (Fig. 1h), quasi- $(E_{12} + E_{21})$  (Fig. 1i). It is shown that the eigenvalues of the  $H_{01}$  and  $E_{11}$  modes are different which suggests the possibility of using

a cross-shaped waveguide for the bends of an  $H_{01}$  transmission system. There are 2 figures, 9 tables and 3 references: 2 Soviet-bloc and 1 non-Soviet-bloc.

SUBMITTED: April 13, 1961

Card 3/03

KUZ'MIN, N.A.; PERSEKOV, M.V.

Symposium on electromagnetic theory and antennas. Vest. AN SSSR  
32 no.12:79-80 D '62. (MIRA 15:12)  
(Antennas (Electronics)—Congresses)  
(Electromagnetic theory—Congresses)

L 17291-63 BDS

ACCESSION NR: AP3004844

S/0141/63/006/003/0581/0584

AUTHOR: Kuz'min, N. A.; Makarov, T. V. 45

TITLE: Propagation of quasi- $H_{01}$  mode in a cross-shaped waveguide

SOURCE: IVUZ. Radiofizika, v. 6, no. 3, 1963, 581-584

TOPIC TAGS: cross-shaped waveguide, waveguide,  $H_{01}$  mode

ABSTRACT: This is a continuation of the authors' work (Izv. vyssh. uch. zav. - Radiofizika, 4, 1089, 1961). The Ritz method is again used to find a second approximation to the eigenvalue and eigen function of a quasi- $H_{01}$  mode in a sector-cross waveguide. This data permits determining geometrical parameters of the waveguide which would ensure passing  $H_{01}$  mode with a minimum disturbance. Calculated curves serve to determine the optimum, insofar as the "purity" of the  $H_{01}$ -mode field is concerned, cross-section of the waveguide. Orig. art. has: 3 figures and 2 formulas.

Card 1/2

PRISED'KO, B.S.; KUZ'MIN, N.F.; BOREYKO, A.V.; PALEVSKIY, S.A., inzh.,  
nauchnyy red.; SKVORTSOVA, I.P., red.izd-va; BOROVNEV, N.K.,  
tekhn.red.

[Constructing apartment houses using large brick blocks] Stroi-  
tel'stvo zhilykh zdaniy iz krupnykh kirpichnykh blokov; poka-  
zatel'noe stroitel'stvo po Novo-Gospital'noi ulitse v g.Kieve.  
Moskva, Gos.izd-vo lit-ry po stroit., arkhitekt. i stroit.mate-  
rialam, 1958. 55 p. (MIRA 12:9)

(Kiev--Apartment houses) (Building blocks)

USSR/Engineering

Card : 1/1

Authors : Kuz'min, N. F., Cand. of Tech. Sciences

Title : About the coefficient of friction in contact under a heavy load.

Periodical : Vest. Mash. 34/5, 18 - 26, May 1954

Abstract : The causes for failure of gear drives functioning under conditions of good lubrication but with a heavy load are analyzed. The difference between the effect of sliding contact under little strain and that under a load exceeding 10,000 kg/cm<sup>2</sup> are explained. Formulas for the decrease of the coefficient of friction between lubricated surfaces with the increase of speed are presented. One German, one French, three English, and seven Russian references, latest 1951. Graphs; drawings; illustrations.

Institution : ....

Submitted : ....



KUZ'MIN, N. F.

"Investigation of Methods for the Manufacture and Supply of Rigid Couplings and Anchor Bolts in the Overhaul of Locomotive Boilers." Cand Tech Sci, Moscow Order of Lenin and Order of Labor Red Banner Inst of Railroad Transport Engineers imeni I. V. Stalin, Min Higher Education USSR, Moscow, 1955. (KL, No 14, Apr 55)

SO: Sum. No. 704, 2 Nov 55 - Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (16).

*KUZ'MIN, N.F.*  
VOSKOBOYNIKOV, M.P., [deceased] dotsent; KUZ'MIN, N.F., kandidat tekhnicheskikh nauk; SAVIN, M.M., starshiy ~~prepodavatel~~'.

Designing cylindrical pitch gears cut by standard hobbing cutters. Nauch.trudy NPI 30(44):53-61 '55. (MLRA 9:11)  
(Gear cutting)

KUZ'MIN, N.F., kandidat tekhnicheskikh nauk.

Pressure-contact ratio parameters for lubricant viscosity.

Nauch.trudy NPI 30(44):109-114 '55.

(MLRA 9:11)

(Lubrication and lubricants)

KUZ'MIN, N.P., kandidat tekhnicheskikh nauk.

Minimum contact safety zone on gear wheel surfaces. Nauch.trudy  
NPI 30(44):115-121 '55. (MLRA 9:11)  
(Gearing) (Friction)

KUZ'MIN, N.F., kandidat tekhnicheskikh nauk.

Investigating frictional forces between steel roller contacts  
at high-speed sliding and high temperatures. Nauch. Trudy NPI  
30(44):123-130 '55. (MLRA 9:11)  
(Friction) (Lubrication and lubricants)

GENKIN, M.D., kand.tekhn.nauk; KUZ'MIN, N.F., dot., kand.tekhn.nauk;  
MISHARIN, Yu.A., kand.tekhn.nauk

Effect of friction conditions on the friction coefficient in  
case of rolling with slipping. Izv.vys.ucheb.zav.; mashinostf.  
no.2:21-28 '58. (MIRA 11:12)

1. Institut mashinovedeniya AN SSSR i Novochoerkasskiy  
politekhicheskii institut.  
(Friction)

KUZ'MIN, N.F., dotsent, kand.tekhn,nauk

Effect of idling on the contact strength of steel. Trudy MPI  
46 '58. (MIRA 13:5)

1. Kafedra teorii mekhanizmov i detaley mashin Novochoerkasskogo  
ordena Trudovogo Krasnogo Znameni politekhnicheskogo instituta  
imeni S. Ordzhonikidze.  
(Gearing) (Steel--Testing)

KUZ'MIN, N. F.

PHASE I BOOK EXPLOITATION

SOV/3601

Genkin, Mikhail Dmitriyevich, Nikolay Fedotovich Kuz'min, and Yuriy Aleksandrovich Misharin

Voprosy zayedaniya zubhatykh koles (Problems of Welding Wear of Gear Teeth)  
Moscow, Izd-vo AN SSSR, 1959. 146 p. 4,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut mashinovedeniya.

Resp. Ed.: S. V. Pinegin, Doctor of Technical Sciences, Professor; Ed. of Publishing House: M. Ya. Klebanov; Tech. Ed.: P. S. Kashina.

PURPOSE: This book is intended for technical personnel dealing with toothed gear design. It may also be used by students in advanced engineering courses.

COVERAGE: A method for calculating welding wear of gear teeth is described. The method was developed by the Institut mashinovedeniya AN SSSR (Institute of Machine Science, Academy of Sciences USSR) and is said to have been proven practicable in the aircraft industry and other related branches of industry. It is based on temperature flashes at the contact surface of gear teeth. Problems of lubrication and the lubrication characteristics of various lubricants are investigated by means of a specially designed testing machine;

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Problems of Welding Wear of Gear Teeth

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results are given in graphs and tables. Experimental data on friction coefficients and welding wear are tabulated in Appendixes I and II. The authors thank the following persons for their assistance: A.A. Blagonravov, Academician; V.G. Mikhaylov, Doctor of Technical Sciences, Professor; M.M. Khrushchov, Doctor of Technical Sciences, Professor; V.A. Gavrilenko, Doctor of Technical Sciences, Professor; V.S. Shchedrov, Doctor of Technical Sciences, Professor; and G.M. Krasivina, A.V. Sivyakova, K.S. Sokolova, and N.N. Sychkov. There are 86 references: 30 Soviet, 48 English, 7 German, and 1 French.

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AUTHORS: Genkin, M.D., Kuz'min, N.F., and Misharin, Yu.A.,  
(Candidates of Technical Sciences)

TITLE: Experimental Relations for the Determination of Friction  
Coefficients in the Tooth Contact of Gear Wheels  
(Eksperimental'nyye zavisimosti dlya opredeleniya  
koeffitsiyentov treniya v kontakte zub'yev zubchatykh  
koles)

PERIODICAL: Vestnik Mashinostroyeniya, 1959, Nr 4, pp 29-32 (USSR)

ABSTRACT: Tests involving rollers in a combination of sliding and  
rolling motion simulating tooth contact have not so far  
been conducted to cover the range of speeds encountered  
far away from the pitch point where seizure is most  
likely. At the Institut Mashinovedeniya (Mechanical  
Engineering Institute), AN SSSR, in association with the  
Novocherkasskiy Politekhnicheskii Institut (Novocherkassk  
Polytechnical Institute) imeni S. Ordzhonikidze, tests  
were carried out under large contact stresses, at large  
rolling and sliding speeds in the presence of  
lubrication. The contact stresses reached 3000 kg/cm<sup>2</sup>,  
the sliding speeds varied up to 12 m/sec and the rolling  
speed was constant at 23.3 m/sec. Diverse materials for  
the small (60 mm diameter) and large (90 mm) roller and

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different lubricants were used (summarised in the table). The temperature of the small roller was measured with a thermocouple and was controlled by heating or cooling the oil. The friction torque was measured. About 10,000 measurements of the coefficient of friction were carried out for different combinations of materials, lubricants and other conditions. At high speed, hydrodynamic lubrication is prevalent. A typical friction coefficient would be 0.02, but never exceeding 0.085. The friction coefficient is independent of the material of the rubbing surfaces, changes little with the contact stress, diminishes with increasing sliding and rolling speeds, increases with rising temperature and diminishes with increasing oil viscosity (at the same temperature). In the important range of variables, the coefficient of friction can be plotted as a function of the product of oil viscosity, rolling speed and sliding speed and yields a straight line in logarithmic co-ordinates. The slope corresponds to an exponent of 0.25. Such a formula is valid only between the breakdown of the

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